REMARKS

Claims 2, 6-8, 16-17 and 22-31 are all the claims presently pending in the application. Claims 2, 7, 16 and 17 have been amended. Claims 1, 3-5, 9-11, 13-15 and 18-21 have been canceled. Claims 22-31 have been added.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 2 and 6-8 stand rejected under 35 U.S.C. § 112, first paragraph as allegedly failing to comply with the written description requirement. Applicant notes that claim 2 has been amended to address the Examiner's concerns. Therefore, claims 2 and 6-8 are clear and not indefinite, and the Examiner is respectfully requested to withdraw this rejection.

Claim 17 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Iwakoshi et al. (JP 08-213015) in view of Yamaguchi et al. (U. S. Pat. Pub. 2002/0037458).

Claims 2 and 6-7 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Kazuhara et al. (JP 2003-068298) in view of Yamaguchi et al. (U. S. Pat. Pub. 2002/0037458).

Claim 8 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Kazuhara and Yamaguchi, further in view of Shiozaki et al. (JP 2003-007298).

Claim 16 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Iwakoshi and Yamaguchi et al., further in view of Shiozaki.

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

An exemplary aspect of the claimed invention (e.g., as defined by claim 2) is directed to a nonaqueous electrolyte battery which includes a positive electrode including a positive active material comprising a composite oxide having an α-$NaFeO_2$-type crystal structure and represented by a composite formula: $Li_xMn_aNi_bCo_cM_dO_2$ (wherein $0 \leq x \leq 1.1$, $a+b+c+d=1$, $|a-b|<0.05$, $0.33 \leq c \leq 0.84$, d has a value of 0.1 or less, and M includes a member selected from the group consisting of V, Al, Mg, Cr, Cu and Zn (Application at page 16, line 3; page 48, lines 2-

22).

Other exemplary aspects of the claimed invention are directed to a nonaqueous electrolyte battery including a positive electrode, a negative electrode, and a nonaqueous electrolyte. The nonaqueous electrolyte includes a cyclic carbonate having a carbon-carbon π bond in an amount which is not greater than 20% by weight of said nonaqueous electrolyte, and the positive electrode comprises a positive active material comprising a composite oxide having an α-$NaFeO_2$-type crystal structure and represented by a composite formula: $Li_xMn_aNi_bCo_cO_2$ (wherein $0 \leq x \leq 1.1$, $a+b+c=1$, $|a-b|<0.05$, $0.67 \leq c \leq 0.84$).

Importantly, in these exemplary aspects, the negative electrode includes graphite, and the graphite may include a modified graphite that has been modified by adding thereto at least one member selected from the group consisting of a metal oxide, phosphorus, boron, and amorphous carbon (e.g., as recited in claim 16), or the graphite may include a combination of a graphite with one of a lithium metal and a lithium metal-containing alloy (e.g., as recited in claim 17).

In conventional batteries, a nonaqueous solvent may decompose at the negative electrode, causing gas to be generated which causes the battery to swell (Application at page 4, lines 5-10).

In an exemplary aspect of the claimed invention, on the other hand, the battery may include a **positive electrode** including a positive active material comprising a composite oxide having an α-$NaFeO_2$-type crystal structure and represented by a composite formula: $Li_xMn_aNi_bCo_cM_dO_2$ (wherein $0 \leq x \leq 1.1$, $a+b+c+d=1$, $|a-b|<0.05$, $0.33 \leq c \leq 0.84$, d has a value of 0.1 or less, and M includes a member selected from the group consisting of V, Al, Mg, Cr, Cu and Zn (e.g., claim 2) (Application at page 16, line 3; page 48, lines 2-22), which may restrain swelling and improve battery performance, or a **negative electrode** including graphite which may include a modified graphite that has been modified by adding thereto at least one member selected from the group consisting of a metal oxide, phosphorus, boron, and amorphous carbon (e.g., as recited in claim 16), or a combination of a graphite with one of a lithium metal and a lithium metal-containing alloy (e.g., as recited in claim 17) which may function to inhibit electrolyte decomposition and have the effect of restraining swelling and improving battery performance (Application at page 25, line 7-page 26, line 15).

II. THE ALLEGED PRIOR ART REFERENCES

A. Iwakoshi and Yamaguchi

The Examiner alleges that Iwakoshi would have been combined with Yamaguchi to form the invention of claim 17. Applicant would submit, however, that these alleged references would not have been combined and even if combined, the alleged combination would not teach or suggest each and every element of the claimed invention.

In particular, Applicant respectfully submits that these alleged references are unrelated. Indeed, no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the references provide no motivation or suggestion to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, neither Iwakoshi, nor Yamaguchi, nor any alleged combination thereof teaches or suggests a nonaqueous electrolyte battery "*wherein the negative electrode comprises graphite, and wherein said graphite comprises a combination of a graphite with one of a lithium metal and a lithium metal-containing alloy*", as recited, for example, in **claim 17** (Application at page 25, line 7-page 26, line 15). As noted above, these features may help which may inhibit electrolyte decomposition.

Clearly these features are not taught or suggested by Iwakoshi.

Indeed, Applicant would point out that in Paragraph 7 of the Office Action (page 5), the Examiner comments on Claim 17 as follows:

> "IWAKOSHI et al. discloses ... The negative electrode of a lithium secondary battery comprises a combination of a graphite with a lithium compound such as a lithium metal or lithium alloy (paragraph [0019])" (emphasis added).

However, in the paragraph [0019] in Iwakoshi (i.e., the original JP-A-8-213015 which is written in Japanese), there is given no description relating to the combined use of graphite with a lithium metal, lithium alloy or the like. There is a possibility that the Examiner would read a machine-translated English text of the patent publication and would mistake it. The following is a correct English translation of the original

description (written in Japanese) in the patent publication cited by the Examiner.

> *"[0019] Specifically, lithium or a lithium compound is used as a negative active material. Accordingly, the negative electrode is composed by the use of a material capable of being doped and undoped with lithium, a lithium metal or a lithium alloy. As the material capable of being doped and undoped with lithium of those negative electrode-constitutive materials, for example, usable are carbonaceous materials such as thermally-cracked carbons, cokes (pitch coke, needle coke, petroleum coke, etc.), graphites, glassy carbons, calcined organic polymer compounds (those prepared by calcining and carbonizing phenolic resins, furan resins and the like at suitable temperatures), carbon fibers, active carbon and the like, or polymers such as polyacetylene, polypyrrole and the like. As the lithium alloy, usable are lithium-aluminium alloys, lithium-indium alloys and the like. In forming a negative electrode of such a material, a known binder and the like may be added thereto"* (emphasis added).

That is, Iwakoshi simply teaches that "the negative electrode is composed by the use of '(i) a material capable of being doped and undoped with lithium (i.e., graphites, et al.)', '(ii) a lithium metal' or '(iii) a lithium alloy'". This is completely different from the claimed invention in which the negative electrode includes a **combination** of graphite with one of a lithium metal and a lithium metal-containing alloy.

Therefore, Applicant respectfully submits that Iwakoshi does not teach or suggest a negative electrode including a combination of a graphite with one of a lithium metal and a lithium metal-containing alloy.

Likewise, Yamaguchi does not teach or suggest this feature. Indeed, similarly to Iwakoshi, Yamaguchi simply teaches that as an anode active material "a material **capable of being electrochemically doped/dedoped** with lithium under a potential of 2.0 V or lower relative to the lithium metal may be used" (Yamaguchi at [0043]; emphasis added).

Again, Applicant would point out a material that is "**capable of being electrochemically doped/dedoped**" with lithium is completely different from the claimed invention in which the negative electrode includes a **combination** of graphite with one of a lithium metal and a lithium

metal-containing alloy.

Therefore, Yamaguchi clearly does not make up for the deficiencies of Iwakoshi.

Therefore, Applicant would submit that these alleged references would not have been combined and even if combined, the alleged combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

B. Kazuhara

The Examiner alleges that Kazuhara would have been combined with Yamaguchi to form the invention of claims 2 and 6-7. Applicant would submit, however, that these alleged references would not have been combined and even if combined, the alleged combination would not teach or suggest each and every element of the claimed invention.

In particular, Applicant respectfully submits that these alleged references are unrelated. Indeed, no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the references provide no motivation or suggestion to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, neither Kazuhara, nor Yamaguchi, nor any alleged combination thereof teaches or suggests a nonaqueous electrolyte battery "*wherein the positive electrode comprises a positive active material comprising a composite oxide having an* α*-*$NaFeO_2$*-type crystal structure and represented by a composite formula:* $Li_xMn_aNi_bCo_cM_dO_2$ *(wherein* $0 \leq x \leq 1.1$*,* $a+b+c+d=1$*,* $|a-b|<0.05$*,* $0.33 \leq c \leq 0.84$*, d has a value of 0.1 or less, and M comprises a member selected from the group consisting of V, Al, Mg, Cr, Cu and Zn*", as recited, for example, in **claim 2** (Application at page 16, line 3; page 48, lines 2-22). As noted above, these features may help to restrain swelling and improve battery performance.

Clearly, these features are not taught or suggested by Kazuhara.

Indeed, the Examiner attempts to rely on [0033] in Kazuhara to support his position. This is completely unreasonable. In fact, [0033] in Kazuhara simply discloses a compound of

$Li(Ni_{0.34}Co_{0.33}Mn_{0.33})_{0.99}Ti_{0.01}O_2$. That is, nowhere does Kazuhara teach or suggest a positive active material comprising a composite oxide having an α-$NaFeO_2$-type crystal structure and represented by a composite formula: $Li_xMn_aNi_bCo_cM_dO_2$ (wherein $0 \leq x \leq 1.1$, $a+b+c+d=1$, $|a-b|<0.05$, $0.33 \leq c \leq 0.84$, d has a value of 0.1 or less, and **M includes a member selected from the group consisting of V, Al, Mg, Cr, Cu and Zn.**

Likewise, Yamaguchi does not teach or suggest these features.

Indeed, Yamaguchi simply teaches a cathode active material including a lithium-manganese composite oxide expressed by the general formula $Li_xMn_{2-y}M'_yO_4$, wherein M' indicates at least one element selected from Fe, Co, Ni, Cu, Zn, Al, Sn, Cr, V, Ti, Mg, Ca and Sr, and $0.5 \geq y \geq 0.01$ (Yamaguchi at [0017]).

That is, like Kazuhara, Yamaguchi does not teach or suggest a positive active material comprising a composite oxide having an α-$NaFeO_2$-type crystal structure and represented by a composite formula: $Li_xMn_aNi_bCo_cM_dO_2$ (wherein $0 \leq x \leq 1.1$, $a+b+c+d=1$, $|a-b|<0.05$, $0.33 \leq c \leq 0.84$, d has a value of 0.1 or less, and **M includes a member selected from the group consisting of V, Al, Mg, Cr, Cu and Zn.**

Therefore, Yamaguchi clearly does not make up for the deficiencies of Kazuhara.

Therefore, Applicant would submit that these alleged references would not have been combined and even if combined, the alleged combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

C. Shoziaki

The Examiner alleges that Kazuhara and Yamaguchi would have been further combined with Shoziaki to form the invention of **claim 8**, and that Iwakoshi and Yamaguchi would have been further combined with Shoziaki to form the invention of **claim 16**. Applicant would submit, however, that these alleged references would not have been combined and even if combined, the alleged combination would not teach or suggest each and every element of the claimed invention.

In particular, Applicant respectfully submits that these alleged references are unrelated. Indeed, no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the references provide no motivation or suggestion to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, with respect to claim 8, neither Kazuhara, nor Yamaguchi, nor Shoziaki, nor any alleged combination thereof teaches or suggests a nonaqueous electrolyte battery "*wherein the positive electrode comprises a positive active material comprising a composite oxide having an α-$NaFeO_2$-type crystal structure and represented by a composite formula: $Li_xMn_aNi_bCo_cM_dO_2$ (wherein $0 \leq x \leq 1.1$, $a+b+c+d=1$, $|a-b|<0.05$, $0.33 \leq c \leq 0.84$, d has a value of 0.1 or less, and M comprises a member selected from the group consisting of V, Al, Mg, Cr, Cu and Zn*", as recited, for example, in **claim 2** (Application at page 16, line 3; page 48, lines 2-22), As noted above, these features may help to restrain swelling and improve battery performance.

Clearly these features are not taught or suggested by the cited references.

Indeed, as noted above, neither Kazuhara, nor Yamaguchi teach or suggest a positive active material including a composite oxide having an α-$NaFeO_2$-type crystal structure and represented by a composite formula: $Li_xMn_aNi_bCo_cM_dO_2$ (wherein $0 \leq x \leq 1.1$, $a+b+c+d=1$, $|a-b|<0.05$, $0.33 \leq c \leq 0.84$, d has a value of 0.1 or less, and **M includes a member selected from the group consisting of V, Al, Mg, Cr, Cu and Zn.** Shiozaki does not make up for the deficiencies of Kazuhara and Yamaguchi.

Indeed, Shiozaki simply teaches a positive electrode active material including a composite oxide having an α-$NaFeO_2$ type crystal structure and represented by a chemical formula: $Li_xMn_aNi_bCo_cO_2$, where $0.30 \leq a \leq 0.5$, $0.36 \leq b \leq 0.55$, $0 \leq c \leq 0.34$, $0.95 \leq x/(a+b+c) \leq 1.05$ (Shiozaki at Abstract). That is, like Kazuhara and Yamaguchi, Shiozaki does not teach or suggest a positive active material including a composite oxide having an α-$NaFeO_2$-type crystal structure and represented by a composite formula: $Li_xMn_aNi_bCo_cM_dO_2$ (wherein $0 \leq x \leq 1.1$, $a+b+c+d=1$, $|a-b|<0.05$, $0.33 \leq c \leq 0.84$, d has a value of 0.1 or less, and **M includes a member selected from the group consisting of V, Al, Mg, Cr, Cu and Zn.**

Further, with respect to claim 16, neither Iwakoshi, nor Yamaguchi, nor Shoziaki, nor any alleged combination thereof teaches or suggests a nonaqueous electrolyte battery "*wherein the*

negative electrode comprises graphite, and wherein said graphite comprises a modified graphite that has been modified by adding thereto at least one member selected from the group consisting of a metal oxide, phosphorus, boron, and amorphous carbon", as recited, for example, in **claim 16** (Application at page 25, line 7-page 26, line 15). As noted above, these features may help to inhibit electrolyte decomposition.

Clearly these features are not taught or suggested by the cited references.

Indeed, as noted above, Iwakoshi simply teaches that "the negative electrode is composed by the use of '(i) a material capable of being doped and undoped with lithium (i.e., graphites, et al.)', '(ii) a lithium metal' or '(iii) a lithium alloy'", and Yamaguchi simply teaches that as an anode active material "a material **capable of being electrochemically doped/dedoped** with lithium under a potential of 2.0 V or lower relative to the lithium metal may be used". That is, nowhere does Iwakoshi or Yamaguchi teach or suggest a negative electrode including graphite which may include a modified graphite that has been modified by adding thereto at least one member selected from the group consisting of a metal oxide, phosphorus, boron, and amorphous carbon, as recited in claim 16.

Likewise, Shiozaki does not make up for the deficiencies in Iwakoshi and Yamaguchi.

In fact, Applicant would point out that in Paragraph 10 of the Action (page 11), the Examiner comments on Claim 16 as follows:

> *"However, SHIOZAKI et al. teaches that the negative electrode material comprising graphite may also comprise a combination of graphite with a lithium metal or a lithium alloy (paragraph [0038])."*

However, in the paragraph [0038] in the original JP-A-2003-7928 (written in Japanese), there is given no description relating to the combined use of graphite with a lithium metal or lithium alloy. The Examiner would read a machine-translated English text of the patent publication, "For example, carbon materials (for example, graphite, ...) besides a lithium metal, a lithium alloy ...", and would mistake it. However, this English sentence is an obvious mistranslation. The following is a correct English translation of the original description (written in Japanese) in the patent publication cited by the Examiner.

"[0038] For the negative electrode material, any one may be selected that has

a morphology capable of being undoped or doped with a lithium ion. For example, there are mentioned a lithium metal, a lithium alloy (lithium metal-containing alloy such as lithium-aluminium, lithium-lead, lithium-tin, lithium-aluminium-tin, lithium-gallium, and Wood's alloy, etc.), a lithium composite oxide (lithium-titanium), silicon oxide, as well as a carbon material (e.g., graphite, hard carbon, low-temperature calcined carbon, amorphous carbon etc.), etc."

That is, like Iwakoshi and Yamaguchi, nowhere does Shiozaki teach or suggest a negative electrode including graphite which may include a modified graphite that has been modified by adding thereto at least one member selected from the group consisting of a metal oxide, phosphorus, boron, and amorphous carbon, as recited in claim 16.

Therefore, Shiozaki clearly does not make up for the deficiencies of Iwakoshi and Yamaguchi.

Therefore, Applicant would submit that these alleged references would not have been combined and even if combined, the alleged combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

An Information Disclosure Statement including Belanger et al. (U.S. Patent 4,517,265) is submitted concurrently herewith.

In view of the foregoing, Applicant submits that claims 2, 6-8, 16-17 and 22-31, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 9/10/08

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